

## Brexit, collective uncertainty and migration decisions

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Auer, Daniel; Tetlow, Daniel

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## **Brexit, Collective Uncertainty and Migration Decisions**

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## Abstract

### Brexit, Collective Uncertainty and Migration Decisions

by Daniel Auer and Daniel Tetlow<sup>\*</sup>

Brexit – the United Kingdom leaving the European Union – continues to create an unpredictable social and political landscape. Uncertainty and perceptions are influential drivers when it comes to migration decisions, and yet, the literature’s inference typically relies on individual-level data. This leaves the possibility of unobserved confounding factors being simultaneously associated with uncertainty perceptions. We leverage the British referendum of 2016 to leave the European Union as a unique natural experiment to demonstrate how collective uncertainty, induced by national government policy, affects the migratory behaviour of the citizens of an entire nation. Using official bilateral migration statistics, we highlight a substantial increase in migration flows from the UK to the remaining EU/EFTA countries. Exceptional spikes in naturalisation figures further indicate that UK-immigrants already living in other EU member states are actively taking decisions to mitigate the negative impact Brexit can have on their lives and livelihoods. We analyse encompassing interview data conducted among UK-immigrants in Germany to show that uncertainty about future bilateral relations and concerns about a negative economic outlook and social consequences in the UK, have been by far the most important driver of migration and naturalisation decisions in the post-referendum period.

*Keywords:* Migration Decisions, Uncertainty, Subjective Beliefs, Risk preferences, Brexit

*JEL classification:* F22, D80, D81, J61

*Disclosure statement:* The authors declare that they have no relevant financial interest that relate to the research described in this paper.

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## Zusammenfassung

### Brexit, Kollektive Unsicherheit und Migrationsentscheidungen

von Daniel Auer und Daniel Tetlow

Nach wie vor ist es unmöglich, die Auswirkungen des Brexit - dem Austritt des Vereinigten Königreichs aus der Europäischen Union – sowohl in sozialer als auch in politischer Hinsicht abzuschätzen. Unsicherheit und subjektive Wahrnehmungen stellen gleichzeitige wichtige Faktoren dar, wenn es um Migrationsentscheidungen geht. Dennoch stützt sich die Literatur in der Regel auf die Analyse von Individualdaten, welche die Möglichkeit offenlassen, dass unbeobachtete Störfaktoren gleichzeitig mit individuellen Wahrnehmungen korrelieren. Wir nutzen das britische Referendum von 2016 als ein einzigartiges natürliches Experiment um zu zeigen, wie kollektive Unsicherheit, die durch nationale Regierungspolitik induziert wird, das Migrationsverhalten der BürgerInnen einer ganzen Nation beeinflusst. Auf der Grundlage offizieller bilateraler Migrationsstatistiken zeigen wir eine erhebliche Zunahme der Migrationsströme aus dem Vereinigten Königreich in die übrigen EU/EFTA-Länder. Außergewöhnliche Spitzenwerte bei den Einbürgerungszahlen weisen zudem darauf hin, dass britische EinwanderInnen, die bereits in anderen EU-Mitgliedsstaaten leben, aktiv Entscheidungen treffen, um die negativen Auswirkungen von Brexit auf ihr Leben und ihre Existenzgrundlage zu mildern. Wir analysieren in der Folge umfassende Interviewdaten, die unter britischen EinwanderInnen in Deutschland durchgeführt wurden, um zu zeigen, dass die Unsicherheit über zukünftige bilaterale Beziehungen und die Besorgnis über negative wirtschaftliche Aussichten und soziale Folgen im Vereinigten Königreich bei weitem die wichtigste Triebkraft für Migrations- und Einbürgerungsentscheidungen in der Zeit nach dem Referendum waren.

*Schlüsselwörter: Migrationsentscheidungen, Unsicherheit, Subjektive Wahrnehmungen, Risikopräferenz, Brexit*

*JEL-Klassifikation: F22, D80, D81, J61*

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## 1 Introduction

Quantifying drivers of migration has been at the centre of research across the social sciences. People move for numerous reasons, such as escaping conflict or climate change, seeking economic improvement, or to achieve other personal and family goals (e.g., Massey and Espinosa 1997; Black et al. 2011; Carling and Collins 2018; Van Hear et al. 2018). One aspect that has found less attention among migration scholars is subjective beliefs, in particular perceptions about the future and levels of uncertainty attached to them, that have proven influential factors for everyday human behaviour (e.g., Kahneman and Tversky 1979) including migration decisions (e.g., Harris and Todaro 1970). Several studies have shown that uncertainty about the political, economic, or social state of a home country can trigger migratory behaviour. However, most of these studies focus on differences across individuals.

In this study, we leverage the UK Brexit referendum and its subsequent period of political promises, negotiations, and reassurances as a natural experiment, which has spread a significant layer of uncertainty to the people of an entire nation. Already prior to the vote on June 23, 2016, the British public debate was marked by forecasts about the economic and political impact of a potential exit from the EU. This was amplified by negotiations about border patrols, free trade zones, and regulations, which failed to produce any real certainty or national confidence in the subsequent three years. Still today, over four years since the referendum, the impact of Brexit is yet to be determined.

For British citizens living in the EU, for European citizens living in the UK, and for UK and European citizens considering a move, the referendum is having a major impact on their migration choices. Based on official migration statistics between the United Kingdom and the remaining EU/EFTA member states, we show that the vote led to an increase in migration from the UK to the EU by approximately 17,000 persons per year, that is a 30 percent increase compared to pre-Brexit numbers. Over the same period, migration within the EU increased to a much lesser extent and stagnated recently. Using panel regressions, we interpret the surplus increase of approximately 15 percent as the causal effect of the Brexit referendum on subsequent migratory behaviour of UK citizens. To the best of our knowledge, there is no other study that has looked at the impact of the referendum on uncertainty-driven migration patterns at the pan-European level.

Furthermore, we analyse naturalisation numbers of UK citizens, in host countries, seeking an EU passport. Our findings show an exceptional impact of the Brexit vote across continental Europe with over a 500 percent increase. As with the changes in migration patterns, the unprecedented increase in naturalisations, accompanied by permanent residence rights, has been a direct



reaction to increased uncertainty about future bilateral residence regimes due to the Brexit vote (e.g., McGhee et al. 2017; Benson 2019).

To shed light on the mechanisms at play, we conducted 46 in-depth semi-structured interviews with British citizens who migrated to Germany between 2007 and 2019. The uncertain implications of the referendum were shown to be the driving force behind most post-2016 migration events, while personal motivations dominated prior. We conclude that collective uncertainty - in this case triggered by a major national policy change – is powerful enough to alter migratory behaviour at scales comparable to early changes in migration patterns from Eastern Europe to the UK after the enlargement of the European Union in 2004 (Dustmann et al. 2010).

This article proceeds as follows: In the subsequent section we highlight previous literature on the role of uncertainty and risk perceptions for migration decisions. Section 3 summarises our argument. In section 4, we present the empirical identification and results from official migration statistics, while section 5 provides an in-depth perspective on the likely mechanisms at play using encompassing data from our interviews. Section 6 concludes.

## **2      Uncertainty, risk, and migration decisions**

There is increasing literature on the impact of uncertainty perceptions and risk preferences on migration decisions. While both concepts are closely related, risk preferences mostly refer to an individual's willingness to accept known risks, whereas uncertainty perceptions describe the broader concept of incomplete information about future outcomes.

A few recent studies look at personality traits and argue that differences in risk preferences across individuals can explain migratory behaviour. Jaeger et al. (2010) use panel data to demonstrate that individuals who report a higher willingness to take risks are also more likely to migrate within Germany. This finding has later been corroborated by Akgüç, et al. (2016) for rural-to-urban migration in China. Dustmann et al. (2017) use the same longitudinal household data from China to further show that, within households, the least risk averse members are more likely to migrate.

The second strand in the literature originates from economic theory arguing that migration decisions result from individual utility maximisation. Individuals compare the utility of staying in their home country with alternative utilities in potential destination countries, whereby the expected pay-off in the destination location is lowered by the – monetary and non-monetary – cost of migration (e.g., Williams and Baláž 2012). These approaches remain relatively agnostic about individual differences in terms of (constant) personality traits (e.g., Katz and Stark 1987;

Dequiedt and Zenou 2013). Hence, if the discounted – economic and social – utility is higher in another country, and if this net present utility remains positive after deducting the cost of migration, people will migrate.

In a parsimonious scenario, potential migrants possess perfect information about the situation in the country of origin and in the potential destination country (e.g., Baláž et al. 2016). Early work considers migration under uncertainty about current social and economic conditions (e.g. Todaro 1969; Harris and Todaro 1970). Burda (1993) advanced these static models by adding uncertainty about future conditions in the origin and destination country. The two approaches were later combined, for instance by O’Connell (1997) who elaborates a model of migration under uncertainty about the current situation in the destination country and uncertainty about future events in both countries. He argues that uncertainty about the future should deter migration. This option value effect has been partly contradicted by Anam et al. (2008) who exploit the time differences between visa issuance and Hong Kong emigrants landing in Canada during a time when reunification with China was pending. The authors find that migration decisions are hastened when income diversification motives play a role. Saarela and Rooth (2012) leverage linked registry data from Sweden and Finland to compare labour market outcomes of Finnish immigrants prior and after migration, finding that return migration probabilities are higher among those who faced an earnings loss. The authors interpret this as evidence that incomplete information (uncertainty) drives migration, as individuals try to correct lower realised earnings by returning to Finland. Dustmann (1997) proposes a life-cycle model of optimal (return-) migration timing. Taking migration from the former Soviet Union member states to Western Europe as an example, he argues that uncertainty positively affects migration (duration) in two scenarios: if the wage differentials between sending and receiving country are large, or if the perceived risk of the labour market in the country of origin is larger than in the host country (see also Davanzo 1983). Similarly, Czaika (2015) proposes Migration Prospect Theory as an advancement of Kahneman and Tversky (1979). Using bilateral migration flows between 26 EU countries and 16 German Federal States, he finds that a negative economic outlook in the origin country labour market has a stronger effect on migration flows than an equal-sized positive outlook in the country of destination. We argue that this latter scenario applies to the present Brexit situation.

### **3 Collective Uncertainty as a Result of the Brexit Vote**

For the first time, a member country has decided to leave the European Union (see Table A.1 in the Appendix for a short chronology of events). This is also the first time a state seceded from a free-movement area that continued to exist, unlike for example with the breakup and disintegration of the Soviet Union. The departure of the UK from the EU has not yet provided a new

agreed residency status for UK citizens in the EU and EU citizens in the UK are being asked to reapply for settled status which has left many millions of people in a state of uncertainty (c.f. Kilkey 2017). Furthermore, the economic impact of the UK seceding from the EU is yet to be understood.

Recent case studies have already reported the impact of Brexit on people's perceptions. From the opposite angle, Duda-Mikulín (2019) shows that EU (Polish) immigrants in the UK started leaving the country due to perceived uncertainty over their futures following the referendum vote. Similarly, Lulle et al. (2019) highlight the negative response and the uncertainty over future plans among European young-adult students in London. Moreover, UK citizens living in the EU are equally affected due to the sudden insecure status of their residence rights in the European Union. Benson (2019) finds that UK immigrants in France, facing a lack of political assurances in terms of residence rights, started taking precautionary measures to avoid negative Brexit-induced consequences. For eligible UK immigrants, the obvious insurance mechanism against unfavourable third country residence regulations is to obtain a EU passport through naturalisation.<sup>1</sup>

We argue that the decision to leave the European Union is equivalent to an indiscriminate exogenous shock affecting the people of an entire nation – independent of where they live in Europe and whether or not they supported Brexit. The referendum therefore has caused what we henceforth label as collective uncertainty over future socio-economic conditions in the UK. To quote Vargas-Silva (2016):

“There is major uncertainty about the rules that will regulate post-Brexit EU migration to the UK and UK migration to the EU. [...] Arrangements to regulate the flow of migrants can vary from a model in which free movement is largely unaffected to strong selection criteria of the type currently imposed on non-EU nationals.”

In contrast, residence and movement rights of citizens from the remaining EU countries and those associated with the European free movement area (EFTA) are not affected by the United Kingdom's unilateral decision. This allows us to observe the relationship between uncertainty and migration patterns from a comparative perspective and to leverage intra-EU migration patterns as a control group to account for larger temporal trends.

With few exceptions, what most empirical studies looking at the impact of uncertainty on migration have in common, is that they explain different outcomes across individuals. While micro-

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<sup>1</sup> Naturalisation or the acquisition of a permanent residence permit to insure against a potentially negative outcome of Brexit negotiations, have also been important goals for Polish (EU) migrants living in the UK (McGhee et al. 2017).

level approaches bring several advantages, the identification of uncertainty perceptions as the likely mechanism is challenging because variation in individuals' perceptions might correlate with factors that impact migratory behaviour but which remain unobserved. To counter this endogeneity issue we contribute to the literature with a macro-level approach and highlight the effect of collective uncertainty. Thereby, our study also relates to the literature on the relationship between economic (e.g., McKenzie et al. 2014), political (e.g., Moore and Shellman 2004), or climatic shocks (e.g., Abel et al. 2019) and migration.

## 4 Empirical Evidence

The empirical evidence we provide rests on two different approaches. First, we demonstrate the change in migration and naturalisation patterns using official migration statistics. Subsequently, we leverage encompassing data from 46 interviews to shed light on the underlying mechanisms at play.

Accurate figures on migration and naturalisation are scarce. We rely on annual flow data as of December 31st, provided by Eurostat (Commission 2020), measuring immigration by nationality for most of the EU member states including EFTA countries Iceland, Norway, and Switzerland as signatories of the Schengen treaty. We aggregate immigration numbers to each country-year into two groups based on their citizenship, UK immigrants and EU/EFTA immigrants. The latter consists of citizens from all countries in our sample, except for the UK and citizens of the receiving country itself (i.e. native return-migrants). This allows us to compare migration patterns over time between affected Britons and non-affected EU/EFTA migrants. As for naturalisation numbers, because of lacking accurate dis-aggregated information, the two groups consist of British citizens who naturalised in one of the EU/EFTA countries, and all other non-British citizens (including non-EU countries).<sup>2</sup>

The resulting panel consists of  $N = 286$  aggregated flows and naturalisation figures from 26 Schengen countries between 2008 and 2018.<sup>3</sup> We address missing data in a two-step process. First, for 47 country-year observations (approx. 16% of the sample) we complete missing information on the inflow of UK citizens with data from the International Migration Database (OECD

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<sup>2</sup> While migration patterns clearly differ between EU and non-EU sending countries, this is less the case for naturalisation patterns. Moreover, since we are interested in changes over time, comparing UK naturalisations with all non-British naturalisations should not lead to biased estimates.

<sup>3</sup> Information on migration flows is partly available prior to 2008 but with limited quality. Data on disaggregated numbers is mostly or fully missing for Cyprus, Greece, Latvia, and Malta, so that we dropped these countries from our sample. We argue that these countries' migration patterns are marginal on the European level, thus, excluding them should not bias our findings.

2020) after checking for comparability of the two Eurostat and OECD data for non-missing cases.<sup>4</sup> Second, for the remaining 19 country-year observations (approx. 6% of the panel) where neither Eurostat nor OECD data on flow/naturalisations is available, we follow the approach by Abel (2010) and estimate the average predicted flow/naturalisation number based on 100 imputations identified with an economic gravity model of migration:

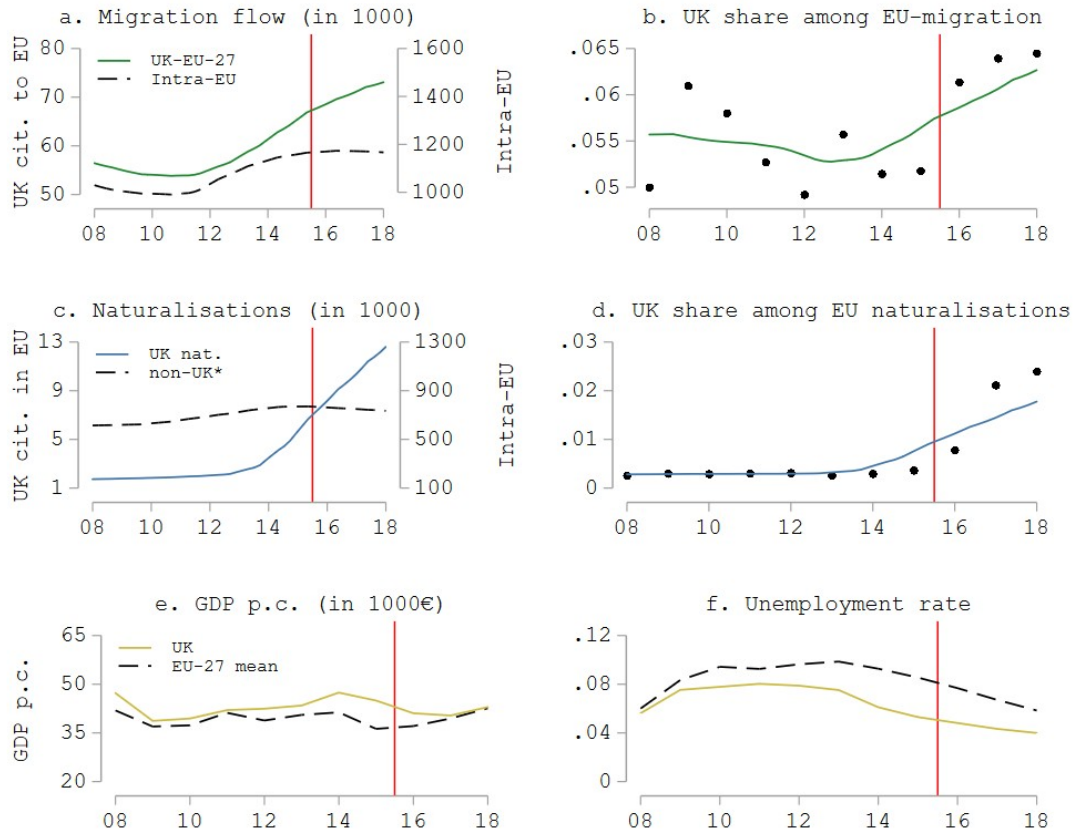
$$\hat{Y}_{rt} = pop_{rt} + gdp_{rt} + gnipc_{rt} + trade_{rt} + \varepsilon_{rt} \quad (1)$$

where the imputed outcome (immigration and naturalisations) is a function of the receiving country's population in the same year, its gross domestic product, gross national product per capita (all Worldbank 2020), and its total commodity trade volume (United Nations 2020). We performed all analyses without imputed values, which produced substantively identical results. The summary statistics comparing pre- and post-Brexit migration flows and naturalisations for each country in our sample are shown in the Appendix, Table A.2 and A.3, respectively.

Figure 1 shows the local polynomial regressions and their confidence intervals at the 95%-level. In 2014, approximately 59 thousand British citizens migrated to one of the 26 EU/EFTA countries in our sample (Figure 1.a). This number rose to 62 thousand in 2015, and to 72 thousand in 2016, respectively. Over the same period, we observe an initial increase of EU-citizens migrating to another EU/EFTA-member state (excl. UK) from 1.15 million in 2014 to 1.21 million in 2015. However, this number decreased again during 2016 to 1.16 million migrants. To highlight this divergence, we plot the UK-to-EU migration flow as a share of the intra-EU flow. Despite some variation prior to Brexit (shares between 5 and 6 percent), the post-Brexit shares of UK migrants clearly stand out with 6 to 6.5 percent (Figure 1.b).

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<sup>4</sup> OECD flows are available for partly missing Eurostat data for Austria, Belgium, France, Germany, Iceland, Ireland, Poland, Portugal. Importantly, there is no systematic temporal pattern. Hence, OECD data cannot drive any estimated Brexit effect even it were different from Eurostat measurements.



**Note:** Aggregated annual flows/naturalisations in 1000. \*non-UK = total naturalisations minus UK naturalisations. A-D: Epanechnikov polynomial fit (bandwidth 1.5).

**Figure 1:** UK-EU migration, naturalisation, and economic trends over time

Moreover, we find strong evidence that British citizens, in unprecedented large numbers, try to protect themselves from any potential negative impact of Brexit by acquiring citizenship of their EU/EFTA host country (Figure 1.c). Here, the numbers increased by more than 520 percent relative to approximately 20 percent for within-EU/EFTA naturalisations, reflecting an increase in the share of UK naturalisations relative to intra-EU naturalisations from 0.5 to 2.5 percent (Figure 1.d). Importantly, most EU member states accept dual citizenship, but only if the second country is also an EU member. This created a strong incentive for eligible British citizens to acquire the nationality of their host country for as long as the UK was an EU member state.

In sum, both the migration flows and the naturalisation numbers of UK citizens migrating to continental EU and EU citizens migrating to another EU/EFTA country have remarkably similar trends between 2008 and 2014. In 2015, when the Brexit referendum entered the public debate in the UK (see Table A.1), the corresponding UK figures started to diverge from the EU/EFTA trend line. This was further emphasised in 2016, the year of the referendum vote, and the numbers have continued to diverge in all subsequent years of our observation period.

We also plot two indicators of economic performance (GDP per capita and unemployment) in Figure 1.e and 1.f, respectively. In line with other forecasting studies (e.g. Portes and Forte 2017, Ramiah et al. 2017 Hantzsche et al. 2019) both variables indicate that the (negative) economic impact of Brexit until the end of 2018 was arguably relatively small. This, in turn, suggests that changes in migration and naturalisation patterns were not driven by actual socio-economic changes in the immediate aftermath of the referendum, but rather by perceptions and beliefs about future negative consequences. We interpret these figures as first evidence that uncertainty over the future (economic) situation in the UK led many British to a move across the channel to continental Europe. In fact, the aggregated post-Brexit vote migration flows of UK citizens deviate from the pre-Brexit numbers by more than 30 percent. As a reference, migration of non-UK EU/EFTA citizens within EU/EFTA countries increase by less than 9 percent over the same period, resulting in a surplus increase of approximately 15 percent that is likely driven by Brexit.

To highlight the statistical significance of this event, we perform two parsimonious fixed effects regressions of the following form

$$Y_{srt} = U_{srt} + B_t + \mu_r + \varepsilon_{srt} \quad (2)$$

where the UK (EU/EFTA) inflow  $Y$  to a specific receiving country in a given year is a function of the EU/EFTA (UK) inflow of that same year, the interaction of the receiving country  $R$  with a dummy indicating the post-Brexit period  $B$ , and receiving country fixed effects  $\mu$  as well as an error term. As an alternative specification, we replace the country-fixed effects with a vector of controls  $X$  (population size, GDP, GNI per capita, trade value, and a dummy for EU membership of the receiving country):

$$Y_{srt} = U_{srt} + B_t + \mathbf{X}_{rt} + \varepsilon_{srt} \quad (3)$$

In both specifications, the post-Brexit indicator is substantial in magnitude and statistically significant for UK-to-EU migration, whereas we find no effects for the corresponding intra-EU flows. Our preferred fixed effects model predicts an average annual increase of 600 UK citizens who migrate to an EU/EFTA country and an additional 800 internal EU/EFTA-migrants. To put these increases into perspective, the respective average pre-Brexit inflow of UK migrants is 5,200 per country and year, versus 46,900 internal-EU/EFTA migrants per year. According to the covariate adjusted model, the effect of Brexit on UK immigration to the EU/EFTA increased by more than 1,100 annual migrants per country or more than 20 percent, whereas the effect for intra-EU/EFTA migration is negative and statistically insignificant.

**Table 1:** Effect of Brexit on migration flows

	UK to EU		intra-EU	
	(1)	(2)	(3)	(4)
EU-26 inflow	0.01*** (0.00)	0.03*** (0.00)		
UK inflow			4.62*** (1.25)	7.14*** (1.23)
<b>post-Brexit period</b>	597.83*** (168.61)	1138.34** (544.15)	776.65 (2410.37)	-11951.69 (10617.87)
Population		-1199.20 (954.65)		18706.54 (20410.17)
GDP		3219.99*** (1078.95)		-20416.48 (19575.98)
GNI per capita		-3078.72 (1912.60)		50028.30 (39397.79)
Trade values		-1453.78*** (475.81)		25344.13*** (5248.82)
EU member		628.54** (300.66)		-19438.15*** (4178.94)
Constant	164.14 (232.81)	3865.72 (9428.79)	49754.60*** (4068.18)	-882131*** (207898)
Observations	286	286	286	286
Country fixed effects	yes	no	yes	no

**Notes:** OLS, with robust SE in parentheses. \* p<0.10 \*\* p<0.05 \*\*\* p<0.01. Own calculations.

To capture the effect of Brexit on existing immigrants, we apply equations (2) and (3) on naturalisations of UK and EU/EFTA citizens in another EU/EFTA country. Here, the estimated increase relative to the sample mean is even more striking and unprecedented in the younger history. Prior to the vote, 75 Britons on average naturalised in an EU/EFTA country per year. We estimate an additional 360 to 407 naturalisations per country-year after the referendum, which corresponds to an increase of approximately 600 percent. Again, the coefficient of the EU/EFTA control group are statistically insignificant and small in magnitude (pre-Brexit sample mean = 31,400).

Evidently, June 23rd, 2016 did not mark a break point for the EU/EFTA member states in terms of their internal migration and naturalisation patterns. In contrast, the UK experienced a substantial structural break, which is reflected in both, British citizens deciding to leave the UK and the run on EU-26 passports.



**Table 2:** Effect of Brexit on naturalisations

	UK naturalisations		non-UK naturalisations	
	(1)	(2)	(3)	(4)
non-UK naturalisations	0.00 (0.00)	0.00** (0.00)		
UK naturalisations			0.06 (0.90)	7.11*** (2.08)
<b>post-Brexit period</b>	407.59*** (101.70)	360.64*** (96.82)	2550.73 (2267.23)	5182.19 (5414.09)
Population		-34.66 (108.13)		-8471.46 (9914.40)
GDP		-97.14 (122.92)		44884.60*** (9366.51)
GNI per capita		148.13 (208.50)		-30122.08 (18435.49)
Trade values		241.01*** (64.62)		-16630.10*** (4471.37)
EU member		-112.47*** (40.93)		3260.12 (3593.97)
Constant	-102.18* (60.60)	-4448.73*** (1546.90)	7310.75*** (713.11)	-285214*** (87394)
Observations	286	286	286	286
Country fixed effects	yes	no	yes	no

**Notes:** OLS, with robust SE in parentheses. \*  $p < 0.10$  \*\*  $p < 0.05$  \*\*\*  $p < 0.01$ . Own calculations.

## 5 Mechanisms

To gain an understanding of the likely mechanisms that led to this massive increase in migration and naturalisation patterns, we draw on 46 in-depth qualitative semi structured interviews conducted with British migrants across Germany. Germany is an ideal case study to assess the impact of Brexit on migration drivers because, first, it has been receiving British migrants at relatively stable numbers for several decades. Second, the German economy dominated the European Union in the past and will continue to do so in the foreseeable future. Thus, we can rule out that changes in perception about future economic developments in the country of destination alter migration patterns over time. Furthermore, it is safe to assume that the country is an equally attractive destination for citizens of most other European Union member states. Third, Germany hosts British citizens who migrated for various reasons, such as employment, education, lifestyle, retirement, military service, etc. This ensures a diverse composition of migrants in our interview sample and allows us to capture potentially heterogeneous effects of Brexit on different segments of the society.

To gauge the impact of uncertainty we explicitly focus on the difference between British migrants that arrived in Germany pre and post the Brexit vote. Interviews were conducted across all 16 German federal states with meticulous attention to the sample recruitment method in order to

access cohorts that are typically difficult to find online. For example, direct approaches were made to British military veterans clubs, sports and workingmen's clubs and associations.

Besides the general criterion that all interviewees had to have migrated to Germany between 2007 and 2019<sup>5</sup> along with a gender balance not exceeding 60% male/female, we imposed several other sampling restrictions: a minimum of 10% were required to reside in towns or villages not above 10,000 inhabitants, and a minimum 20% of the total sample in towns not above 100,000 inhabitants. One intention of this recruitment strategy being to access the non-metropolitan, less mobile and non-IT savvy British constituency. In addition, we stratified samples so that at least 20% of interviewees were school leavers with no higher education experience and at least 20% classified themselves as from a British working-class background. A minimum of 10% of interviewees were required to come from a non-white British heritage and no more than 20% were to hold dual German/British citizenship in order to prevent skewed answers around double identity. Eventually, over 50% originated from a geographical region outside of southern Britain – that is, Scotland, Wales, Central and Northern England - justified by British geographical origin in the referendum vote showing to play a strong role in voting patterns in the referendum (Benson and Lewis 2019).

Interviews were conducted face to face with an average duration of 90 minutes.<sup>6</sup> 82 identical questions<sup>7</sup> were put to the interviewees cold, that is without warning, in order to capture the immediate and more impulsive responses.<sup>8</sup>

The economic approach to migration begins with the assumption that a migration decision is based on a comparison of economic and social conditions in the origin and destination regions; and that migration decisions are motivated by concessions compensated over the long term (e.g. Greenwood 1985). And yet one of the most noticeable outcomes from the interviews conducted for this study was that almost two thirds of the cohort that migrated post 2016 referendum agreed to either a pay cut, or a pay freeze as part of their migration decision. It appears that the economic uncertainty and risk created by the Brexit referendum had a stronger influence on

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<sup>5</sup> The first cohort migrated to Germany 2007 – 2015 and is 55% of the sample and the second cohort migrated 2016 – 2019 - the remaining 45%.

<sup>6</sup> Due to one of the criteria for the interviewees being geographical spread across all 16 German Federal states, a third of the sample was interviewed in person while the rest were interviewed face to face down a video line. This may have slightly influenced the sample representation, though careful consideration was made to explain video calls to those that had not used it before.

<sup>7</sup> While every interviewee was asked exactly the same question for comparative accuracy, the order of the questions was frequently altered depending on factors such as if the interview was conducted in person or down a video line and the setting (work/home/cafe) the interviewee was in.

<sup>8</sup> The questions were carefully considered and phrased to give an open, non-prescriptive approach. For example: "How did you deal with your departure with the rest of the family?" rather than "Did you discuss your departure with the wider family?"

migration decision making than the uncertainty and risk that is inherent with migration. For instance, one respondent who gave up his well-paid job in the UK to move with his family to Germany without employment prospect, reported 8 months after migrating:

*“I have still not found work, which is not what I expected [...] The cost of the move in personal and financial terms is always difficult to foresee and I’m starting to wonder if I under-estimated the risk involved. But I believe the advantages still outweigh the uncertainty that Brexit brought on my family.”* (IT consultant, 40s, male)

Thereby, the empirical evidence supports the hypothesis that emigration from the UK to the EU/EFTA is likely driven by negative perceptions about the future in the UK, rather than by a more positive perception of living conditions in continental Europe (c.f. Dustmann 1997; Czaika 2015).

Besides facing increased uncertainty, the interviews also indicated a willingness to take increased risks changed with the Brexit vote. For instance, more than double the number of interviewees migrating post-referendum reported taking a big risk (57% vs. 24% pre-Brexit), while no risk was reported by three times more people migrating pre-referendum (24% vs. 9% post-Brexit). We remain agnostic about the possibility that Brexit fundamentally changed risk preferences of individuals in this volatile political period, however, it seems as if the trade-off between an insecure future in the UK and the risk of migration favoured a move for many. What is more, over a third of the cohort that arrived post Brexit referendum (2016-9) reported that if the Brexit referendum had not taken place, they would have stayed. The empirical evidence illustrates a structural break that has clearly had an exceptional impact on peoples’ decision making, often translating into a calculation that an increased level of risk taking was necessary and required to deal with the impact of that shock through emigration.<sup>9</sup> This trend is further corroborated by the EU country-wide changes in aggregate migration flows.

Another important finding from the empirical evidence associated with Brexit is reduced levels of consideration and level-headedness in decision making, with increases in levels of impulsiveness, spontaneity and corresponding risk-taking.<sup>10</sup> This is particularly indicated in the speed in which respondents made their migration decisions. Half of the cohort that migrated post-referendum made their decision to migrate and act on it within 12 weeks, while the majority of

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<sup>9</sup> We observed risk mitigating strategies in the wish to return back to the UK in only one interview, with two British retirees planning to sell their house in Germany and return to the UK to be back with family sooner than they otherwise planned.

<sup>10</sup> *“We took big risks - turning our lives around in 8 weeks with 5 children to get to Germany. If we did it again, I wouldn’t do it so quickly.”* (director tech company, female, 40s, migrated 2018)

migration decisions pre-Brexit were taken over the course of more than 12 months, suggesting more considered, rationale thinking.<sup>11</sup>

We observe from the interviews additional areas of peoples' lives that were affected by collective uncertainty. For instance, approximately one third reported Brexit causing direct mental health problems or depression<sup>12</sup> and some interviewees made impulsive decisions to migrate based on perceived health care risks in the UK, such as a lack of critical medication.<sup>13</sup>

Interviewees also reported shame about the referendum result<sup>14</sup> that translated for many into an identity crisis and increased insecurity.<sup>15</sup> Interestingly, we observed a parallel trajectory in levels of social investment. Three quarters of all respondents said they intended to stay in Germany for the long term and to invest more in their social integration (see also Higgins 2019; Trabka and Pustulka 2020). One measure of this was the transformation in attitudes towards the German language, seeing it as a clear investment, as opposed to pre-referendum, when many respondents said they had not felt the effort required to learn German was really necessary. Many examples of social anchoring were reported after 2016 as becoming necessary investments and in some cases a means of self-protection even for those who emigrated years before the referendum.<sup>16</sup>

Along with a perceived increase in solidarity from Germans, two thirds of the sample reported a strengthening sense of European/British identity and almost three quarters said they felt overall positive about their futures in Germany.

There is perhaps an irony to be found in the fact that despite what is often perceived as the long-term damaging impact of the UK's exit from the EU, UK citizens in Germany appear to have often made a much greater commitment to integrate in their local communities as a direct result of Brexit. This new phenomenon has been observed in other EU destination countries, too (e.g., Benson 2019). The UK appears to be losing the capacity and economic contribution of a fast-

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<sup>11</sup> "The referendum happened in 2016 - and we immediately changed our minds about buying a house in Bristol. Our whole emigration decision hung on the referendum result." (academic, male, 40s, migrated 2016)

<sup>12</sup> "It has had a big impact on my well-being because I'm so uncertain about the future and where I stand with my status. I wonder if the Germans will take this opportunity to get rid of Brits." (engineer, male, 50s, migrated 2012)

<sup>13</sup> "The whole move from Scotland was motivated by Brexit and the need for some certainty about my son's leukemia treatment. We are real Brefugees." (housekeeper, female, 40s, migrated 2018)

<sup>14</sup> "Many Brits I speak with describe how they do not recognise Britain any longer, and feel ashamed to call themselves British, drawing instead on regional and local identities like Scottish, Welsh, Lancastrian, from Yorkshire." (translator, female, 30s, migrated 2015)

<sup>15</sup> "We have a real anxiety and sense of loss. As if my birth right has been taken away." (medical scientist, male, 40s, migrated 2010)

<sup>16</sup> "At least Brexit has made me take the decision to push my own integration into German society and I am taking the language learning much more seriously now." (academic, male, 30s, migrated 2010)

increasing number of highly skilled British citizens who have decided to invest in Germany for the long term. And the German state, in strategic acknowledgement of this new social commitment and the long term interest for Germany it offers, has decided to grant approximately a third of all British citizens German/EU citizenship, while allowing them to maintain their British identity.<sup>17</sup> This unprecedented spike in naturalisation figures is corroborated by the empirical results of this study: A minimum of 6 years residence in Germany is typically required to apply for German citizenship and therefore most respondents with dual citizenship would have migrated to Germany prior to the referendum vote. Nonetheless, despite Brexit not being the cause of their original migration decision, a remarkable 90% of respondents with or applying for dual citizenship reported that Brexit was the dominant reason for their application and 74% said they would, or would consider giving up their British citizenship if they had to.

*“Until my German citizenship came through, I felt a huge amount of uncertainty and angst and worry especially when my job was threatened.”*

(teacher, female, 30s, migrated 2009)

Half of the total sample described Brexit as having an extremely large impact on their lives and therefore for those that qualified for dual British German citizenship, it was a form of insurance to maintain citizenship rights that pre-referendum, were assumed to be life-long.<sup>18</sup> Naturalisation protects British immigrants also from an uncertainty that has spread to German employers and contractual partners: a respondent reported that since the referendum, job offers he had received had been withdrawn and his house mortgage declined that he’d already been paying for over a year (see also Benson and Lewis 2019).<sup>19</sup>

In sum, we find overwhelming qualitative evidence that changes in risk perceptions and the increased collective uncertainty associated with the Brexit referendum vote is a key driver of migration decisions. UK citizens who arrived in Germany after June 2016 unanimously state that the unclear future of the British economy led them to leave the UK or at least spurred their decision. At the same time, fearing unsolved bilateral agreements on residence and citizenship rights, all interviewees state Brexit as the main reason to pursue an EU/German passport. This situation led to an increase in migration per se, but also changed the nature of these decisions,

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<sup>17</sup> The German Statistics Authority announced in June 2020 that a total of 31,600 British citizens have been granted dual German/British citizenship (Destatis 2020). EU Citizenship, however, is not a panacea for British citizens as certain rights, such as recognition of qualifications and family reunion rights, are still not assured.

<sup>18</sup> *“Now I have German citizenship I feel ‘Boris proof’ [UK prime minister Boris Johnson]”* (teacher, female, 30s, migrated 2009)

<sup>19</sup> *“I have experienced job discrimination, had mortgages refused and my present employment as a mechanic is ending business year end, so I am dealing with the prospect of being out of work.”* (mechanic, male, 40s, migrated 2017)

from considered long-term planning to hastened, impulsive migration decisions post-vote. Thereby, the qualitative findings corroborate both our theoretical assumption and the structural break in UK-to-EU migration and naturalization patterns as seen in official migration statistics.

## 6 Conclusion

The UK's unilateral decision to leave the European Union has created a unique natural experiment that allows us to analyse the effect of collective uncertainty over future economic and social conditions on migration flows. With this macro level perspective, we contribute to the literature on decision making under uncertainty and the effect of risk perceptions on migratory behaviour, which is typically studied on the micro individual level. Our composite approach of official migration statistics and in-depth qualitative interviews across all 16 German states has shown stark structural changes in migration and naturalisation patterns of emigrating UK citizens in relation to stable intra-EU/EFTA migration flows over the same period.

From a policy perspective, an accurate understanding of Brexit-induced migration patterns – and the motivations driving them – is crucial to guide and enhance future bilateral policies across the European continent. To the best of our knowledge, we are the first to show from a comparative angle that a single national vote can alter the perception of an entire population about future conditions in a way that migration numbers increase by more than 15 percent net of time trends. Furthermore, there is reason to believe that the effect of collective uncertainty in the UK has not yet peaked; with the exit of the UK from the EU by January 1, 2021, bilateral agreements will become effective – which are still not agreed upon.

For destination countries of the European Union, Brexit-induced collective uncertainty marks a significant rise in arrivals of British citizens, which is, in some cases, large enough to alter a country's immigrant composition, especially with regard to linguistics background and education levels. The uncertain situation also prolongs migration episodes, with many Brits making their move permanent by acquiring citizenship rights of their destination countries. In Germany, for instance, the number of British citizens obtaining a German passport – and rights to political participation – is second only to Turkish and even before Polish immigrants, two much more prominent and populous groups in Germany.

Our study does not come without limitations. First and foremost, our qualitative analysis focuses on British migrants in Germany whose emigration decisions could differ from British emigrants to, for example, France, Spain or Ireland. In our defence, we have strong reason to believe that collective uncertainty, induced by Brexit, should not affect self-selection into other destination countries. This is corroborated by the equally strong increase in UK migration flows and

naturalisations in other EU/EFTA countries. However, providing further qualitative evidence from other European member states would certainly add to the scientific debate. Second, we rely on official immigration statistics of EU/EFTA countries. Although this is the best information available to date, it is far from perfect. Several countries failed to report respective figures for single years, and the accuracy of flow data has been under critique in the recent past (e.g., Migration Observatory 2019). We argue that for our purpose of demonstrating large supra-national shifts in migration trends, official immigration statistics suffice, but acknowledge that single country evaluations of smaller groups likely suffer from measurement inaccuracies.

Overall, the Brexit-experiment will continue to provide ample research opportunities in the social sciences, with changes in migration patterns and the effect of insecurity over future conditions certainly calling for further investigations.

## References

- Abel, Guy J. 2010. "Estimation of international migration flow tables in Europe." *Journal of the Royal Statistical Society* 173 (4): 797–825. doi:10.1111/j.1467-985X.2009.00636.x.
- Abel, Guy J, Michael Brotrager, Jesus Crespo Cuaresma, and Raya Muttarak. 2019. "Climate, conflict and forced migration." *Global Environmental Change* 54:239–249. doi:10.1016/j.gloenvcha.2018.12.003.
- Akgüç, Mehtap, Xingfei Liu, Massimiliano Tani, and Klaus F Zimmermann. 2016. "Risk Attitudes and Migration." *China Economic Review* 37:166–176. doi:10.1016/j.chieco.2015. 12.004.
- Anam, Mahmudul, Shin-Hwan Chiang, and Lieng Hua. 2008. "Uncertainty and International Migration: An Option Cum Portfolio Model." *Journal of Labor Research* 29 (3): 236–250. doi:10.1007/s12122-007-9033-y.
- Baláž, Vladimír, Allan M Williams, and Elena Fífeková. 2016. "Migration Decision Making as Complex Choice: Eliciting Decision Weights Under Conditions of Imperfect and Complex Information Through Experimental Methods." *Population, Space and Place* 22 (1): 36–53. doi:10.1002/psp.1858.
- Benson, Michaela. 2019. "Brexit and the Classed Politics of Bordering: The British in France and European Belongings." *Sociology* 54 (3): 501–517. doi:10.1177/0038038519885300.
- Benson, Michaela, and Chantelle Lewis. 2019. "Brexit, British People of Colour in the EU-27 and everyday racism in Britain and Europe." *Ethnic and Racial Studies* 42 (13): 2211–2228. doi:10.1080/01419870.2019.1599134.
- Black, Richard, Stephen Bennet, Sandy Thomas, and John Beddington. 2011. "Migration as adaptation." *Nature*, no. 478: 447–449. doi:10.1038/478477a.
- Burda, Michael. 1993. "The determinants of East-West German migration: Some first results." *European Economic Review* 37 (2-3): 452–461. doi:10.1016/0014-2921(93)90034-8.
- Carling, Jorgen, and Francis Collins. 2018. "Aspiration, desire and drivers of migration." *Journal of Ethnic and Migration Studies* 44 (6): 909–926. doi:10.1080/1369183X.2017.1384134.
- Commission, European. 2020. "EUROSTAT Database." Accessed June 12, 2020. <https://ec.europa.eu/eurostat/web/population-demography-migration-projections/data>.

- Czaika, Mathias. 2015. "Migration and Economic Prospects." *Journal of Ethnic and Migration Studies* 41 (1): 58–82. doi:10.1080/1369183X.2014.924848.
- DaVanzo, Julie. 1983. "Repeat migration in the United States: who moves back and who moves on?" *The Review of Economics and Statistics* 65 (4): 552–559. doi:10.2307/1935923.
- Dequiedt, Vianney, and Yves Zenou. 2013. "International migration, imperfect information, and brain drain." *Journal of Development Economics* 102 (1): 62–78. doi:10.1016/j.jdeveco. 2012.10.003.
- Destatis. 2020. "Number of naturalisations up 15% in 2019 – Brexit caused larger increase than in previous years." Press release No. 197. doi:destatis.de/EN/Press/2020/06/PE20\_ 197\_12511.html.
- Duda-Mikulin, Eva A. 2019. *EU migrant workers, Brexit and precarity: Polish women's perspectives from inside the UK*. Bristol: Policy Press.
- Dustmann, Christian. 1997. "Return migration, uncertainty and precautionary savings." *Journal of Development Economics* 52 (2): 295–316. doi:10.1016/s0304-3878(96)00450-6.
- Dustmann, Christian, Francesco Fasani, Xin Meng, and Luigi Minale. 2017. "Risk Attitudes and Household Migration Decisions." IZA DP No. 10603.
- Dustmann, Christian, Tommaso Frattini, and Caroline Halls. 2010. "Assessing the Fiscal Costs and Benefits of A8 Migration to the UK." *Fiscal Studies* 31 (1): 1–41. doi:10.1111/j.1475- 5890.2010.00106.x.
- Greenwood, Michael. 1985. "Human Migration: Theory, Models, and Empirical Studies." *Journal of Regional Science* 25 (4): 521–544. doi:10.1111/j.1467-9787. 1985.tb00321.x.
- Hantzsche, Arno, Amit Kara, and Garry Young. 2019. "The economic effects of the UK government's proposed Brexit deal." *The World Economy* 42 (1): 5–20. doi:10.1111/twec.12770.
- Harris, John R., and Michael P. Todaro. 1970. "Migration, Unemployment and Development: A Two-Sector Analysis." *American Economic Review* 60 (1): 126–142. doi:jstor . org / stable/1807860.
- Higgins, Katie W. 2019. "National belonging post-referendum: Britons living in other EU Member States respond to "Brexit"." *Area* 51 (2): 277–284. doi:10.1111/area.12472.
- Jaeger, David A., Holger Bonin, Thomas Dohmen, Armin Falk, David Huffman, and Uwe Sunde. 2010. "Direct Evidence on Risk Attitudes and Migration." *The Review of Economics and Statistics* 92 (3): 684–689. doi:10.1162/REST\_a\_00020.
- Kahneman, Daniel, and Amos Tversky. 1979. "Loss Aversion in Riskless Choice: A Reference- Dependent Model." *Econometrica* 47 (2): 263–292. doi:10.2307/1914185.
- Katz, Eliakim, and Oded Stark. 1987. "International Migration Under Asymmetric Information." *The Economic Journal* 97 (387): 718–726. doi:10.2307/2232932.
- Kilkey, Majella. 2017. "Conditioning Family-life at the Intersection of Migration and Welfare: The Implications for 'Brexit Families'." *Journal of Social Policy* 46 (4): 797–814. doi:10. 1017/S004727941700037X.
- Lulle, Aija, Laura Morosanu, and Russell King. 2019. "And then came Brexit: Experiences and future plans of young EU migrants in the London region." *Population, Space, and Place* 24 (1). doi:10.1002/psp.2122.
- Massey, Douglas S., and Kristin E. Espinosa. 1997. "What's Driving Mexico-U.S. Migration? A Theoretical, Empirical, and Policy Analysis." *American Journal of Sociology* 102 (4): 939–999. doi:10.1086/231037.



- McGhee, Derek, Chris Moreh, and Athina Vlachantoni. 2017. "An 'undeliberate determinacy'? The changing migration strategies of Polish migrants in the UK in times of Brexit." *Journal of Ethnic and Migration Studies* 43 (13): 2109–2130. doi:10.1080/1369183X.2017.1299622.
- McKenzie, David, Caroline Theoharides, and Dean Yang. 2014. "Distortions in the international migrant labor market: evidence from Filipino migration and wage responses to destination country economic shocks." *American Economic Journal: Applied Economics* 6 (2): 49–75. doi:10.1257/app.6.2.49.
- Migration Observatory. 2019. "UK migration statistics lose their 'National Statistics' status as ONS confirms problems measuring EU and non-EU net migration." Accessed June 16, 2020. <https://migrationobservatory.ox.ac.uk/press/uk-migration-statistics-lose-their-national-statistics-status-as-ons-confirms-problems-measuring-eu-and-non-eu-net-migration/>.
- Moore, Will H, and Stephen M Shellman. 2004. "Fear of persecution: Forced migration, 1952- 1995." *Journal of Conflict Resolution* 40 (5): 723–745. doi:10.1177/0022002704267767.
- O'Connell, Paul G. J. 1997. "Migration under uncertainty: "Try your luck" or "Wait and see".*" Journal of Regional Science* 37 (2): 331–347. doi:10.1111/0022-4146.00057.
- OECD. 2020. "International Migration Database." Accessed June 16, 2020. <https://stats.oecd.org/Index.aspx?DataSetCode=MIG>.
- Portes, Jonathan, and Giuseppe Forte. 2017. "The economic impact of Brexit-induced reductions in migration." *Oxford Review of Economic Policy* 33 (S1): S31–S44. doi:10.1093/oxrep/grx008.
- Ramiah, Vikash, Huy NA Pham, and Imad Moosa. 2017. "The sectoral effects of Brexit on the British economy: early evidence from the reaction of the stock market." *Applied Economics* 49 (26): 2508–2514. doi:10.1080/00036846.2016.1240352.
- Saarela, Jan, and Dan-Olof Rooth. 2012. "Uncertainty and international return migration: some evidence from linked register data." *Applied Economics Letters* 19 (18): 1893–1897. doi:10.1080/13504851.2012.674196.
- Todaro, Michael P. 1969. "A Model of Labor Migration and Urban Unemployment in Less Developed Countries." *American Economic Review* 59 (1): 138–148. doi:10.2307/1811100.
- Trabka, Agnieszka, and Paula Pustulka. 2020. "Bees and butterflies: Polish migrants' social anchoring, mobility and risks post-Brexit." *Journal of Ethnic and Migration Studies*: 1–18. doi:10.1080/1369183X.2020.1711721.
- United Nations. 2020. "UN Comtrade Database." Accessed June 15, 2020. <https://comtrade.un.org/>.
- Van Hear, Nicholas, Oliver Bakewell, and Katy Long. 2018. "Push-pull plus: reconsidering the drivers of migration." *Journal of Ethnic and Migration Studies* 44 (6): 927–944. doi:10.1080/1369183X.2017.1384135.
- Vargas-Silva, Carlos. 2016. "EU Migration to and from the UK After Brexit." *Intereconomics* 51 (5): 251–255. doi:10.1007/s10272-016-0613-z.
- Williams, Allan M., and Vladimir Baláž. 2012. "Migration, Risk, and Uncertainty: Theoretical Perspectives." *Population Space and Place* 18 (2): 167–180. doi:10.1002/psp.663.
- Worldbank. 2020. "World Bank Open Data." Accessed June 15, 2020. <https://data.worldbank.org/>.

## Appendix

**Table A.1:** Brexit timeline

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07 May, 2015

UK General Election. Prime Minister David Cameron wins a 12-seat majority with a manifesto that includes the commitment to hold an EU Brexit Referendum.

23 June, 2016

Brexit Referendum takes place. Leave EU win a narrow victory with 51.9% against and 48.1% for remain. Mr Cameron resigns as prime minister.

29 March, 2017

Theresa May triggers Article 50 to start the clock on the process of the UK leaving the EU.

29 March, 2019

Brexit day delayed due to no UK Parliament agreement on terms of exit. The UK remains in EU and on 11 April EU agrees to delay until October 31.

23 July 2019

Boris Johnson becomes Prime Minister promising to take UK out of the EU on October 31, 2019.

31 October, 2019

Brexit day – delayed due to no UK Parliament agreement on terms of exit. The UK remains in EU.

5 December, 2019

Boris Johnson wins UK General Election with majority of 80 seats.

31 January, 2020

The UK leaves the EU with an 11 month transition period put in place until 31 December 2020.

02 March, 2020

EU/UK Future Relationship negotiations begin.

31 December 2020

Transition period due to end. Due to Covid19 pandemic, debate as to whether this deadline will be extended.

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**Table A.2:** Flows (in 1000 persons)

	Inflow of EU citizens			Inflow UK citizens			Imputed years
	(1)	(2)	(3)	(4)	(5)	(6)	
	2008-2015	2016-2018	$\Delta(2)-(1)$	2008-2015	2016-2018	$\Delta(5)-(4)$	
Austria	51.07 (4.61)	64.79 (0.29)	13.72 (7.78)	1.04 (0.07)	1.08 (0.04)	0.04 (0.12)	0
Belgium	63.80 (0.78)	60.98 (1.52)	-2.82 (1.56)	1.87 (0.08)	1.65 (0.07)	-0.22 (0.13)	2
Bulgaria	1.97 (0.32)	1.00 (0.19)	-0.98 (0.54)	0.41 (0.06)	0.24 (0.06)	-0.16 (0.11)	4
Croatia	1.52 (0.19)	2.21 (0.02)	0.69* (0.32)	0.07 (0.01)	0.11 (0.01)	0.04** (0.02)	0
Czech Republic	14.77 (1.15)	21.36 (4.16)	6.59* (3.01)	0.43 (0.05)	0.62 (0.07)	0.19* (0.10)	0
Denmark	20.11 (1.12)	25.17 (0.21)	5.07** (1.89)	1.10 (0.06)	1.66 (0.04)	0.56*** (0.10)	0
Estonia	0.77 (0.37)	4.07 (0.30)	3.30*** (0.65)	0.03 (0.01)	0.15 (0.02)	0.12*** (0.03)	0
Finland	8.36 (0.52)	6.86 (0.20)	-1.51 (0.88)	0.34 (0.02)	0.39 (0.04)	0.05 (0.04)	0
France	78.26 (4.24)	78.60 (2.39)	0.35 (7.28)	3.69 (1.81)	10.28 (0.67)	6.59* (3.07)	0
Germany	296.19 (41.88)	389.64 (9.95)	93.46 (70.93)	9.87 (0.34)	11.31 (0.16)	1.44** (0.58)	1
Hungary	12.44 (0.91)	10.95 (0.21)	-1.49 (1.55)	0.37 (0.01)	0.48 (0.02)	0.11*** (0.03)	0
Iceland	2.77 (0.56)	7.30 (1.00)	4.53*** (1.09)	0.10 (0.01)	0.19 (0.01)	0.09*** (0.01)	0
Ireland	26.26 (2.90)	29.90 (1.21)	3.64 (4.94)	4.08 (0.23)	5.66 (0.35)	1.58*** (0.44)	1
Italy	111.82 (17.08)	60.39 (1.58)	-51.43 (28.86)	1.62 (0.12)	1.91 (0.10)	0.30 (0.20)	0
Lithuania	0.52 (0.08)	0.74 (0.02)	0.22 (0.14)	0.02 (0.00)	0.06 (0.00)	0.03*** (0.01)	0
Luxembourg	14.68 (0.61)	16.35 (0.21)	1.68 (1.03)	0.45 (0.01)	0.53 (0.04)	0.08** (0.03)	0
Netherlands	52.06 (2.10)	71.96 (4.50)	19.90*** (4.34)	3.95 (0.17)	5.51 (0.28)	1.56*** (0.33)	0
Norway	33.96 (1.70)	20.61 (0.44)	-13.35*** (2.89)	1.20 (0.06)	0.88 (0.05)	-0.32*** (0.10)	0
Poland	21.24 (2.64)	21.54 (1.18)	0.30 (4.50)	0.65 (0.12)	0.66 (0.03)	0.00 (0.21)	2
Portugal	3.19 (0.57)	7.64 (0.25)	4.45*** (0.98)	1.78 (0.16)	3.03 (0.47)	1.25*** (0.38)	1
Romania	4.22 (0.87)	8.02 (1.20)	3.80** (1.62)	0.34 (0.08)	0.06 (0.02)	-0.28* (0.14)	0
Slovakia	3.43 (0.56)	2.52 (0.24)	-0.92 (0.96)	0.13 (0.03)	0.13 (0.01)	-0.00 (0.04)	0
Slovenia	2.43 (0.21)	3.36 (0.02)	0.93** (0.35)	0.09 (0.01)	0.11 (0.01)	0.01 (0.02)	0
Spain	118.26 (8.79)	133.68 (8.85)	15.41 (15.63)	16.67 (1.10)	21.25 (1.56)	4.58* (2.06)	0
Sweden	27.01 (0.79)	29.54 (0.71)	2.53 (1.39)	1.65 (0.05)	2.03 (0.05)	0.38*** (0.09)	0
Switzerland	94.38 (2.92)	84.22 (1.57)	-10.17* (5.00)	4.86 (0.25)	3.64 (0.05)	-1.22** (0.43)	0
United Kingdom	200.89 (15.21)	231.35 (14.82)	30.46 (26.96)	84.25 (2.49)	77.33 (1.93)	-6.92 (4.33)	0

**Notes:** Robust SE in parentheses. \*  $p < 0.10$  \*\*  $p < 0.05$  \*\*\*  $p < 0.01$ . Inflow of UK citizens into the UK is equivalent to native return-migration. Own calculations.

**Table A.3: Naturalisations**

	EU naturalisations			UK naturalisations			imputed years
	(1)	(2)	(3)	(4)	(5)	(6)	
	2008-2015	2016-2018	$\Delta(2)-(1)$	2008-2015	2016-2018	$\Delta(5)-(4)$	
Austria	7642.13 (439.46)	8980.00 (237.45)	1337.88 (753.65)	4.38 (0.63)	23.33 (9.02)	18.96*** (5.10)	0
Belgium	31645.00 (2302.15)	34200.67 (1408.05)	2555.67 (3964.88)	118.63 (5.85)	977.33 (254.85)	858.71*** (141.22)	0
Bulgaria	1792.38 (773.74)	1178.67 (224.98)	-613.71 (1312.55)	0.00 (.)	0.33 (0.33)	0.33 (0.18)	1
Croatia	2910.63 (872.55)	1836.67 (1068.20)	-1073.96 (1587.42)	4.75 (1.13)	1.33 (0.67)	-3.42 (1.94)	0
Czech Republic	2092.63 (464.88)	3424.67 (649.59)	1332.04 (863.29)	1.13 (0.44)	28.00 (4.36)	26.88*** (2.52)	2
Denmark	5338.38 (1054.50)	8248.00 (3581.91)	2909.63 (2662.98)	34.63 (6.49)	130.67 (23.62)	96.04*** (17.05)	0
Estonia	1459.50 (129.28)	1141.33 (320.56)	-318.17 (281.17)	0.13 (0.13)	0.33 (0.33)	0.21 (0.28)	0
Finland	6629.25 (795.94)	10164.33 (956.94)	3535.08** (1444.48)	18.88 (2.31)	104.00 (36.69)	85.12*** (20.65)	0
France	117676.63 (6607.06)	112640.67 (3432.42)	-5035.96 (11317.80)	283.63 (22.41)	1839.33 (795.92)	1555.71*** (441.59)	0
Germany	106130.50 (2610.52)	109737.00 (592.63)	3606.50 (4420.64)	361.50 (46.88)	5267.67 (1294.51)	4906.17*** (719.93)	0
Hungary	10107.63 (2136.27)	3521.00 (442.31)	-6586.63 (3615.89)	4.38 (0.86)	15.67 (3.28)	11.29*** (2.33)	0
Iceland	604.88 (69.03)	632.00 (39.84)	27.13 (118.63)	3.63 (0.65)	4.33 (1.20)	0.71 (1.29)	0
Ireland	13553.38 (3132.69)	8380.67 (780.57)	-5172.71 (5307.88)	57.25 (5.40)	438.00 (176.01)	380.75*** (97.72)	0
Italy	88568.63 (15828.41)	153413.67 (25976.63)	64845.04* (30342.76)	78.00 (4.07)	159.33 (35.93)	81.33*** (21.02)	0
Lithuania	212.63 (16.32)	164.33 (17.46)	-48.29 (29.20)	0.00 (.)	0.00 (.)	0.00 (.)	0
Luxembourg	3276.00 (380.48)	4780.33 (975.14)	1504.33 (838.69)	48.75 (8.04)	301.33 (86.90)	252.58*** (49.92)	0
Netherlands	28597.38 (809.20)	26967.67 (466.04)	-1629.71 (1390.60)	183.25 (8.92)	1048.67 (204.35)	865.42*** (113.96)	0
Norway	12734.50 (623.54)	15155.67 (3364.16)	2421.17 (2137.05)	51.38 (3.80)	53.67 (13.53)	2.29 (9.86)	0
Poland	3300.13 (291.12)	4328.00 (410.51)	1027.88* (541.46)	5.88 (1.51)	16.00 (6.35)	10.13** (4.33)	0
Portugal	22408.25 (509.40)	21421.67 (2062.14)	-986.58 (1428.07)	15.88 (1.63)	64.67 (23.56)	48.79*** (13.31)	0
Romania	3850.25 (921.96)	5862.33 (685.62)	2012.08 (1602.42)	4.50 (1.64)	2.67 (1.33)	-1.83 (2.86)	5
Slovakia	281.75 (29.89)	580.67 (57.60)	298.92*** (59.69)	0.25 (0.25)	36.00 (13.08)	35.75*** (7.24)	0
Slovenia	1546.00 (99.37)	1611.67 (197.93)	65.67 (200.32)	0.25 (0.16)	1.00 (0.58)	0.75 (0.42)	1
Spain	130238.00 (19536.62)	102687.33 (25104.13)	-27550.67 (35791.91)	42.75 (5.92)	51.33 (3.71)	8.58 (10.21)	0
Sweden	39928.38 (3171.17)	63488.00 (2182.16)	23559.63*** (5489.46)	318.75 (35.97)	1182.00 (107.00)	863.25*** (84.79)	0
Switzerland	37641.00 (1611.62)	42576.00 (762.19)	4935.00 (2754.04)	386.13 (36.27)	883.67 (93.90)	497.54*** (80.28)	0
United Kingdom	168785.63 (13432.82)	143161.67 (10266.52)	-25623.96 (23383.68)	. (.)	. (.)	. (.)	0

**Notes:** Robust SE in parentheses. \*  $p < 0.10$  \*\*  $p < 0.05$  \*\*\*  $p < 0.01$ . Own calculations